(No Model.)

G. T. VOORHEES.

ARC RUPTURING DEVICE.

No. 523,697. Patented July 31, 1894.

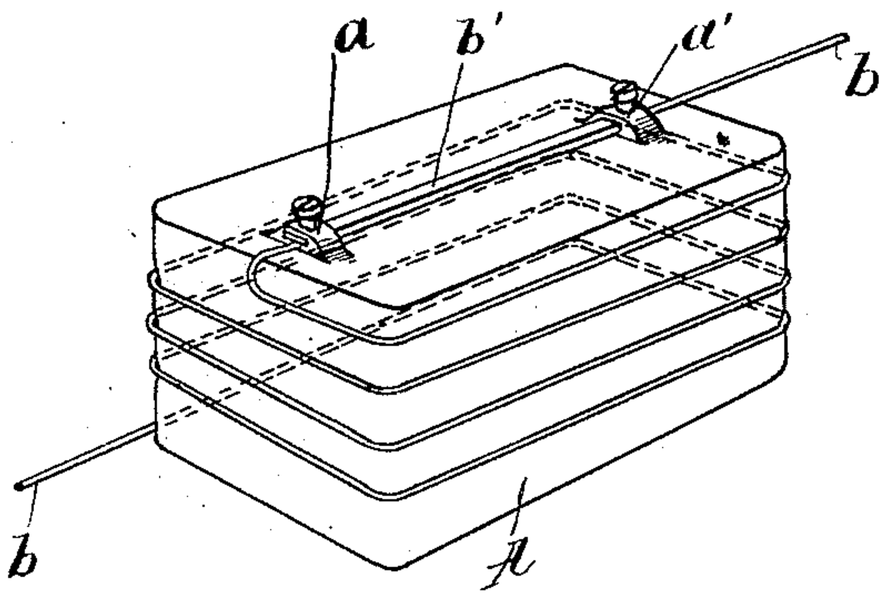

Fig. 1.

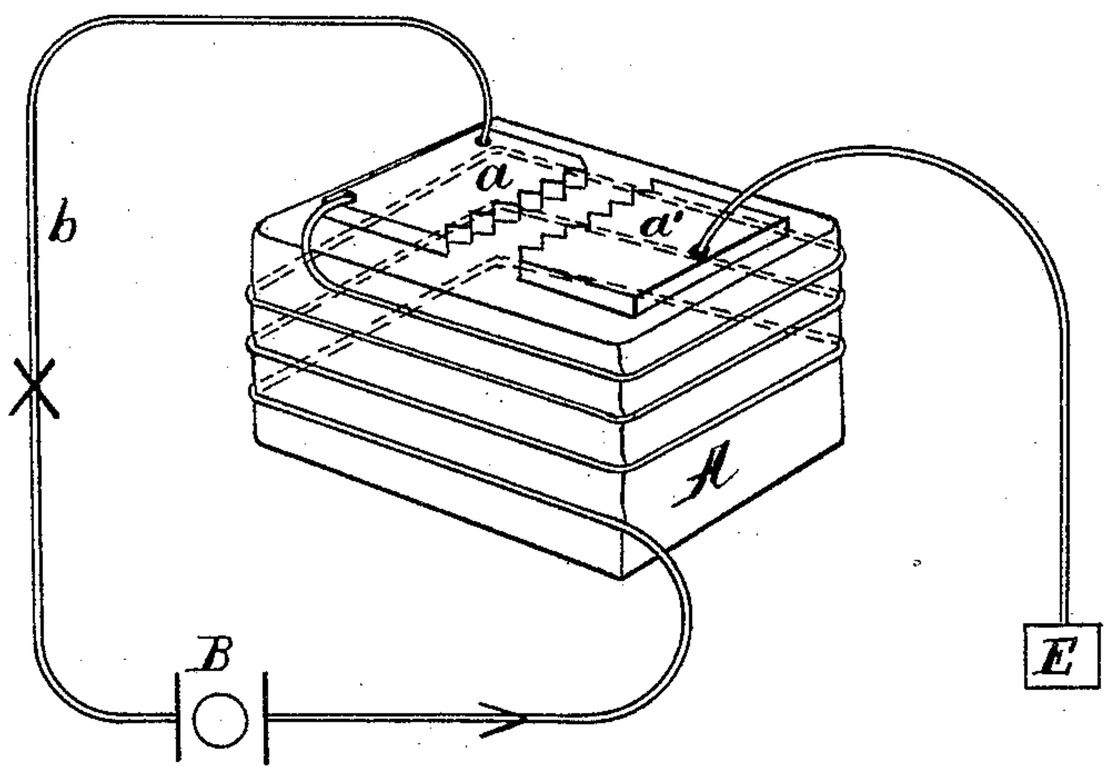

Fig. 2.

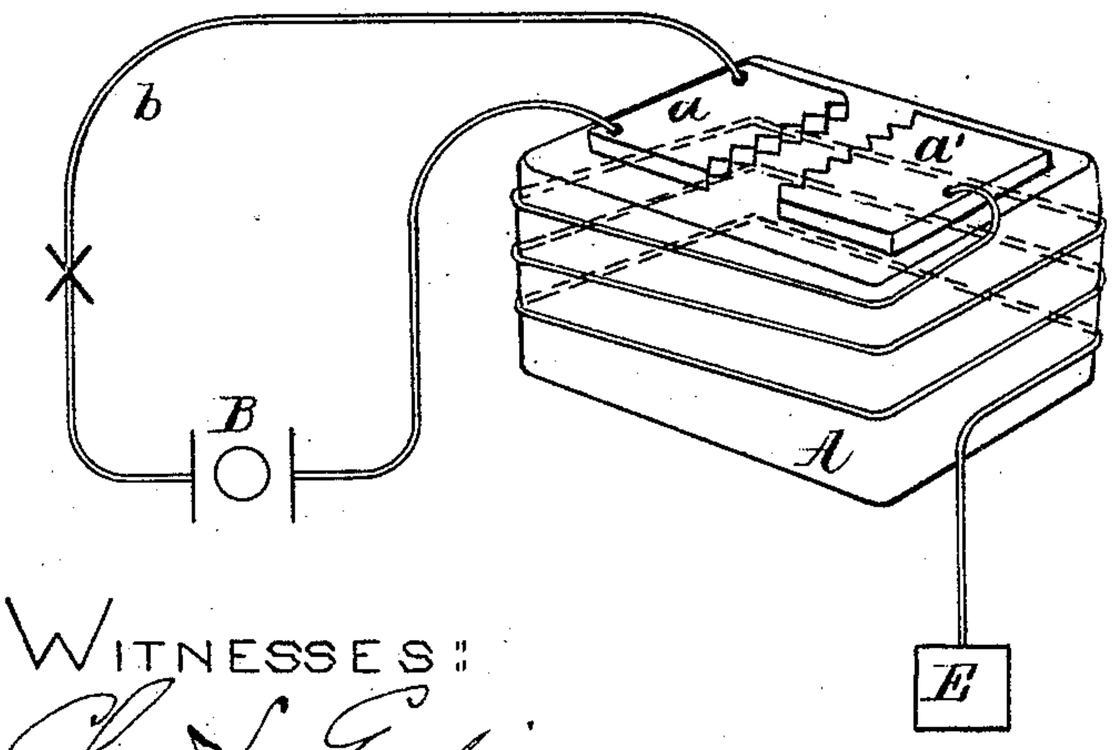

Fig. 3.

WITNESSES:
Chas. S. Gooding.
Thos. H. Seely

INVENTOR:
Gardner T. Voorhees,
by his attorney,
Edward S. Beach.

UNITED STATES PATENT OFFICE.

GARDNER T. VOORHEES, OF BOSTON, MASSACHUSETTS.

ARC-RUPTURING DEVICE.

SPECIFICATION forming part of Letters Patent No. 523,697, dated July 31, 1894.

Application filed May 8, 1893. Serial No. 473,453. (No model.)

To all whom it may concern:

Be it known that I, GARDNER T. VOORHEES, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Arc-Rupturing Devices, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 shows my invention embodied in a circuit partially formed of a fuse. Figs. 2 and 3 show modifications.

The object of my invention is to simplify and cheapen the cost of rupturing electric arcs frequently formed in electric circuits between electrodes or terminals, whether such arcs be formed by the burning out of fuses or by lightning discharges; and my invention consists in the combination of a circuit with insulated electrodes or terminals, the circuit being looped inclusively about the electrodes or terminals, whereby an arc formed from one electrode or terminal to another is ruptured by forces brought into play against the arc, by reason of the looping of the circuit in relation to the electrodes or terminals.

In the drawings, a, a' are electrodes or terminals in circuit b, which is supplied with electricity from any suitable source B of electricity, such as a dynamo-electric machine, for example. In circuit b may be various sorts of electrical apparatus, this circuit typifying a work-circuit for electric-lights, motors, &c. Electrodes or terminals a, a' are each insulated conveniently by an insulator A, and b' represents a fuse and forms a part of circuit b, which is looped one or more times in such wise that the electrodes or terminals a, a' are within the outline of the looped portion of the circuit, so that if an arc be formed from one electrode or terminal to the other by the burning out of the fuse, the arc will be immediately ruptured by the forces brought to bear against it by the looping of the circuit, as will be readily understood by those skilled in the electrical art. It is plain that this looping of the circuit about electrodes or terminals is equally practical when the electrodes or terminals are unconnected, and in this case my invention is susceptible of embodiment in many forms of so-called lightning arresters.

The advantage of my new combination is that in the rupturing of arcs, I am enabled to dispense with the arc-rupturing devices, (involving cores, pole-pieces, valves, levers and springs) hitherto in use as auxiliaries to the work-circuit, and so accomplish the desired result by much more compact, simple and cheaper means than formerly.

Probably several turns of the circuit about the electrodes or terminals are desirable in most cases, for the strengthening of arc rupturing forces; and, in practice, I have thus far found it necessary to have the electrodes or terminals arranged in relation to the loops of the circuit as shown in the drawings.

In Fig. 2, showing a modification, the electrodes or terminals a, a' are in the work-circuit and earth-circuit respectively, and the work-circuit is looped around the electrodes so that if an arc be formed between them (by reason, for example, of the current following a lightning discharge from electrode a to a') the passing of a current through the work-circuit ruptures the arc.

In Fig. 3, showing another modification, the earth-circuit is looped about the electrodes, and the passage of the lightning discharge through the looped earth-circuit occasions rupturing of the arc formed by the work-circuit's current following the lightning discharge.

I am fully aware that my invention may be widely applied and that it will need many different embodiments in practice to adapt it for the great diversity of uses to which it is applicable.

I am aware of Letters Patent No. 283,167, of August 14, 1883; No. 321,434, of July, 7, 1885; No. 401,085, of April 9, 1889; No. 470,721, of March 15, 1892; and English Letters Patent No. 6,063 of 1889, all to Elihu Thomson, and disclaim all that is shown in them.

What I claim is—

In arc-rupturing apparatus, the combination of electrodes or terminals a a' with an insulator A, supporting the electrodes or terminals a a'; and circuit b looped inclusively around the terminals and supported by insulator A, all substantially as and for the purpose set forth.

GARDNER T. VOORHEES.

Witnesses:
EDWARD S. BEACH,
JOHN D. STRICKLER.